Communicating identity through built space – Concise-sous-Colachoz (CH), a case study

Spring, Markus

Abstract: The Nordic Bronze Age Symposium began modestly in 1977 with 13 participants, and has now expanded to over 120 participants: a tenfold increase that reflects the expanding role of Bronze Age research in Scandinavia, not least amongst younger researchers. From having taken a back seat in the 1970s, it is now in the driver's seat in terms of expanding research themes, publications and international impact. This collection of articles helps to explain why the Bronze Age has come to hold such a fascination within modern archaeological research. By providing new theoretical and analytical perspectives on the evidence new interpretative avenues have opened, it situates the history of the Bronze Age in both a local and a global setting.

New Perspectives on the Bronze Age

Proceedings of the 13th Nordic Bronze Age Symposium held in Gothenburg 9th to 13th June 2015

edited by

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Preface

I wish to express my sincere gratitude to all who participated in the 13th Nordic Bronze Age symposium. Thank you for attending the conference, for presenting excellent papers and for asking stimulating questions and sharing a wealth of specialist knowledge, all of which led to a successful, and memorable, conference. I am especially grateful to the session organisers for leading interesting sessions with lively discussions. I am also grateful to Johan Ling for organising the excursion to Tanum on the last day, and to Anna Wessman for leading the excursion to the so-called Bronze Age Strait. In addition, heartfelt thanks must also go to GAST, the student society, and to the student helpers who volunteered during the symposium.

A further round of thanks must go to the contributors to this volume, both for taking the time to write and revise the articles, and for having patience with the numerous small questions that always arise in finalising an edited volume. I would also like to thank my co-editor, Anna Wessman, who assisted until the start of her maternity leave in April 2016. Thanks are also due to Kristin Bornholdt Collins for assisting with matters of language and in the task of adopting the style guidelines of the publisher, and to Rich Potter for setting the volume. I am also grateful to Archaeopress for showing interest when I approached them about publishing the volume.

For generously sponsoring both the conference and this volume, I am profoundly grateful to *Lennart J Hägglunds Stiftelse för arkeologisk forskning och utbilding*.

Finally, I wish to thank my colleagues at the Department of Historical Studies at the University of Gothenburg for their support, from conference planning to production of this volume. Particular thanks go to Johan Ling, Peter Skoglund and Kristian Kristiansen for their input along the way. I hope that the authors are pleased with the final result, and that many will find the diverse collection of articles an interesting and inspiring read.

Gothenburg, March 2017

Sophie Bergerbrant

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Communicating identity through built space — Concise-sous-Colachoz (CH), a case study

Markus Spring[1]

Abstract

The paper explores the fact that throughout history, physical space has been used to express cultural identity or social status. Using methods of Space Syntax, it illustrates how the spatial configuration of Early Bronze Age lakeside settlement Concise-sous-Colachoz in Switzerland developed over time. Through the eyes of a prehistoric visitor, the paper considers how this built space influenced inhabitant-visitor interactions and whether it may have had consequences for the village's future development. The paper concludes that prehistoric settlements also had to provide a sufficiently rich range of interaction-generating space to respond to ever-changing societies.

Key words: Early Bronze Age, Switzerland, Concise-sous-Colachoz, Space Syntax.

Introduction

Today, in an age of cyber space and social media, we have a variety of new ways to express our identity. We can communicate with distant people at the touch of a button. However, while doing so, we are just staring at the small screen of our smart phones, a mere 30cm from our noses, and are hardly aware of our environment anymore. If we would look up, we might notice that we are constantly influenced by the physical space around us, whether it is the natural one or the built environment of our cities.

Throughout history, physical space has been a means of expressing one's cultural identity or social status (Hillier 2007). Expressing identity through built space is a non-verbal communication with two addressees: (a) the inhabitants of a settlement or occupants of a building themselves and (b) visitors from outside. We can still experience how physical space may have influenced people's interactions and defined their social ranks when visiting a royal palace or stately home. Even today as tourists we may be guided through impressive gateways, up towering staircases, along never-ending corridors into sumptuously decorated reception halls, where we find on a pedestal the throne of a king or queen. However, in the past and according to our social status at that time, our journey may have ended long before we were able to meet them.

This article intends to explore whether such a socially defining function of built space was already present in the Early Bronze Age.[2] It will look at Concise-sous-Colachoz, an Early Bronze Age lakeside settlement in Switzerland, and will analyse its spatial layout using Space Syntax methods (Hillier and Hanson 1984). Added to this, it will slip into the role of an Early Bronze Age visitor and explore how he or she may have experienced the village's spatial configuration, and how this may have influenced their interaction with local inhabitants.

Spatial perception and human reaction

In his key note speech at the 6th Space Syntax Symposium in Istanbul, American geographer and psychologist Daniel Montello (2007) outlined how different aspects of the built environment influence human behaviour. Some of the psychological mechanisms Montello mentioned were:

[1] For further developments and questions, criticisms or suggestions, please contact the author at: Joycemarkus@gmail.com.

[2] The present paper is a compilation of verbal presentations at the 13th Nordic Bronze Age Symposium in Gothenburg, June 2015 and the annual meeting of the European Association of Archaeologists in Glasgow, September 2015 as well as a poster presentation at the 10th Space Syntax Symposium in London, July 2015.

- *Sensory access* – e.g. what can be seen, heard;
- *Attention* – e.g. what is looked at;
- *Memorability* – e.g. what is remembered;
- *Behavioural affordance* – e.g. where can one walk;
- *Affect* – e.g. comfort, stress, fear; and
- *Sociality* – e.g. eye contact, social distance.

Montello further explained that these mechanisms not only work physically, for example by something preventing us from walking in a particular direction, but also according to social norms or rules of permissibility and obligation, such as when we are told not to enter private premises (Montello 2007: iv-02).

There are certain cultural differences in how spatial aspects influence human behaviour, which are also not yet fully understood in today's societies. Added to this, in archaeology we have additional filters reducing what is left from the built environment in the archaeological record. It is therefore not possible to reconstruct psychological reactions these triggers may have caused on individuals in the past.

Nevertheless, we may still be able to reconstruct spatial arrangements such as building locations or palisade alignments. Therefore, we can look at what could have been seen, where a visitor was possibly allowed to go or what were the physical distances between inhabitants of a settlement and a visitor from outside. These spatial aspects form the physical framework of human interactions and can be further explored using methods of Space Syntax.

Space Syntax

Space Syntax Analysis is a collective term for a bundle of theoretical and analytical techniques to identify, compare and interpret patterns of spatial configuration (Hillier and Hanson 1984). It was conceived by British urban morphologists Bill Hillier and Julienne Hanson in the late 1970s and has since been further developed by them and researchers worldwide (Hillier 2007).[3] Originally intended as a planning tool for architects to simulate the likely social effects of their designs, Space Syntax is today applied in a wide range of fields spanning from architecture and urban planning to environmental psychology. Over the past decades, it has also increasingly been used for research in archaeology (Cutting 2003).[4]

Space Syntax understands built space of settlements or buildings as a dual interface among inhabitants themselves and between inhabitants and visitors (Hillier and Hanson 1984: 15). It also considers space as intrinsic to all human activity. This means that each human activity has its own distinct geometry (Figure 1a). Movement is linear and one-dimensional, while interactions are two-dimensional in a convex space. Added to this, all people engaged in a spatial interaction need to be 'intervisible'. And finally, when we see space, we see a point isovist, which is made up both of lines radiating from us until they hit an obstacle and the largest convex space in which all points can see all others (Hillier 2014: 19–20).

First and foremost, Space Syntax also regards physical space as configurational, describing a set of simultaneously existing relations (Hillier 2014: 20). To analyse these relations, Space Syntax developed justified permeability graphs, or j-graphs for short (Hillier and Hanson 1984: 106–108). In a j-graph, available open space of a building or settlement is divided into convex subspaces and represented by circles (Figure 1b). If a physical permeability exists between two neighbouring subspaces, which means that one can pass from one to the other, their respective circles will be connected. Generated j-graphs illustrate — similar to an organigram of a company — the relationship of any subspace to any free selectable reference point, including the so-called carrier, the environment outside a settlement or building.

The left graph in Figure 1b was drawn from space no. 5. It is an integrated node because someone does not have to pass through many intervening nodes to get to the others. On the other hand, the j-graph to the right is deep, indicating that one has to go through many intervening nodes to go from one node to the other. Therefore, space no. 10 is deep or segregated. Analysing their configurational properties, subspaces now become more differentiated from one another and their functional potentials much clearer (Hillier 2014: 22).

Space Syntax' toolbox also includes as quantitative techniques axial line analysis, convex spatial analysis, convex isovist analysis or visual graph analysis (VGA) and agent based analysis. Many of these techniques have been integrated in the multi-platform spatial network analysis software depthmapX.[5]

Using some of these techniques, the paper will look at how the spatial configuration in Concise-sous-Colachoz developed and how it changed during its three Early Bronze Age phases.

[3] The history of Space Syntax is outlined by Bill Hillier himself in the e-book version of *Space is the machine* (Hillier 2007: v-ix).

[4] A critical overview of Space Syntax techniques applied to prehistoric settlement analysis can also be found in Cutting 2003.

[5] This is free available under http://varoudis.github.io/depthmapX/.

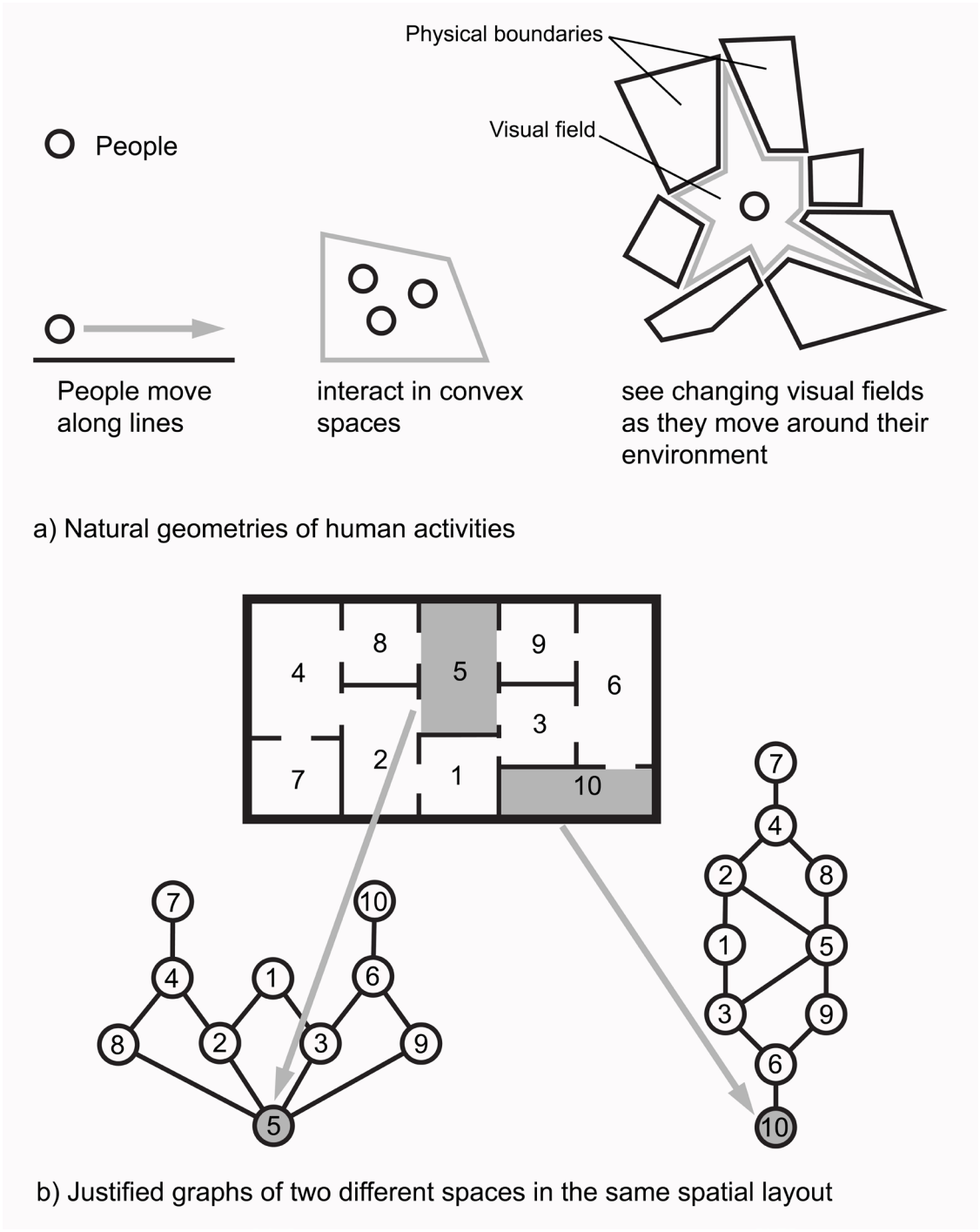

FIGURE 1. NATURAL GEOMETRY OF HUMAN ACTIVITIES AND J-GRAPHS. BASED ON HILLIER 2014: 20, FIG. 1 AND 21, FIG. 2.

Spatial configuration of Concise-Sous-Colachoz

Concise-sous-Colachoz is located at Lake Neuchâtel in today's French speaking western Switzerland approximately midway between the capital Berne and Geneva (Figure 2, left). It was completely excavated between 1995 and 2000. The entire site extends over more than 5000 m2 and its database has enabled the identification of more than 25 villages spanning from Neolithic to Middle Bronze Age (Winiger and Burri-Wyser 2012: 21). This paper will focus on the three well-preserved Early Bronze Age phases that have been tree ring-dated between 1801 and 1570 BC.

Concise-sous-Colachoz, phase E11, is a settlement belonging to the Aare-Rhône-Group of the Rhône Civilisation. It started out as a small village with an elevated walkway connecting it to higher ground (Figures 2, right and 3a). At the far end were a handful of houses built onto the beach platform of Lake Neuchâtel.

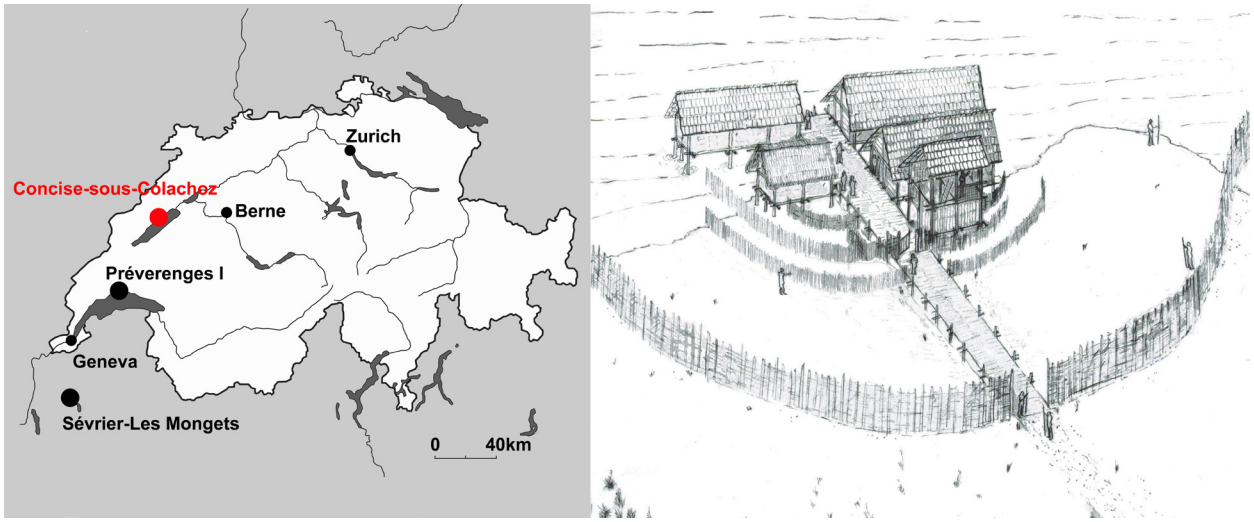

FIGURE 2. SITE LOCATIONS AND ARTISTIC RECONSTRUCTION OF CONCISE-SOUS-COLACHOZ, PHASE E11. RECONSTRUCTION: © MUSÉE CANTONAL D'ARCHÉOLOGIE ET D'HISTOIRE, LAUSANNE. DESIGN: H. LIENHARD, PUBLISHED WITH PERMISSION FROM THE MUSEUM.

These houses were oriented parallel to the shoreline and perpendicularly to the central axis. The village was encircled by a 3m high densely built outer palisade and an additional set of concentric inner palisade rings. There was also a small structure (or possibly two) next to the inner palisade, which is not regarded as a normal house, but was probably a check-point that controlled access to the living quarters (Winiger and Burri-Wyser 2012: 76–77).

Analysing the spatial configuration using j-graphs, we see that Concise-sous-Colachoz E11 had a very simple, tree-shaped structure (Figure 3b). All buildings, including the possible 'check-point', are in the j-graph on similar levels to the central axis. They were a comparable number of steps away from the landside carrier or the big convex space on the beach.

Interesting with respect to this early phase of Concise-sous-Colachoz is that a very similar spatial layout can be found about 150km further south-west in the contemporaneous village of Sévrier-Les Mongets at Lake Annecy in the Savoy Alps. Also, Sévrier-Les Mongets had a central access way, which was encircled by concentric palisade rings and houses that were built perpendicularly to the central axis (Billaud and Marguet 2005: 173, 176, fig. 5). Like Concise-sous-Colachoz, Sévrier-Les Mongets belonged culturally to the Rhône Civilisation. J-graphs of these two contemporaneous villages are, apart from a smaller number of identified houses in Sévrier-Les Mongets, comparable.

About eight generations later, a new village was built in Concise-sous-Colachoz slightly to the west of the previous one (Figure 3c). The village of phase E12, with its living quarters, now covered 2600m2, about 13 times bigger than during its first phase (Winiger and Burri-Wyser 2012: 77). However, the basic spatial configuration in the approach to the village remained the same: concentric palisades again encircled the village; and, a special structure next to the inner palisade was dedicated to controlling access to the living quarters (Figure 3c, black shaded).

Like in the first phase, buildings were perpendicular to the central access path. However, the five identified rows of houses had been extended to two to five buildings each (Figure 3c). At the height of Concise-sous-Colachoz E12, three buildings were added on both ends of the village (Figure 3c, dark grey shaded). However, these houses were built perpendicularly to all others and may have served a special function.

The structure of the living quarters within the inner palisade ring was now much more complex (Figure 3d). The fact that houses were built on stilts on both sides of the central axis, and that particularly the ones on the eastern side of the village were built into Lake Neuchâtel, results in deep connectivity. This reflects that buildings at the far end of a row were, in terms of accessibility, dependent on the ones nearer to the elevated walkway. A more distributed structure in the j-graph only existed between houses on dry ground, which allowed alternative routes for movement.

After a fire between 1620–1618 BC completely destroyed the village, Concise-sous-Colachoz was rebuilt on a much smaller scale and maintained until 1570 BC (Figure 3e). However, due to erosion no archaeological material can be attributed to this phase (Winiger and Burri-Wyser 2012: 126, 153).

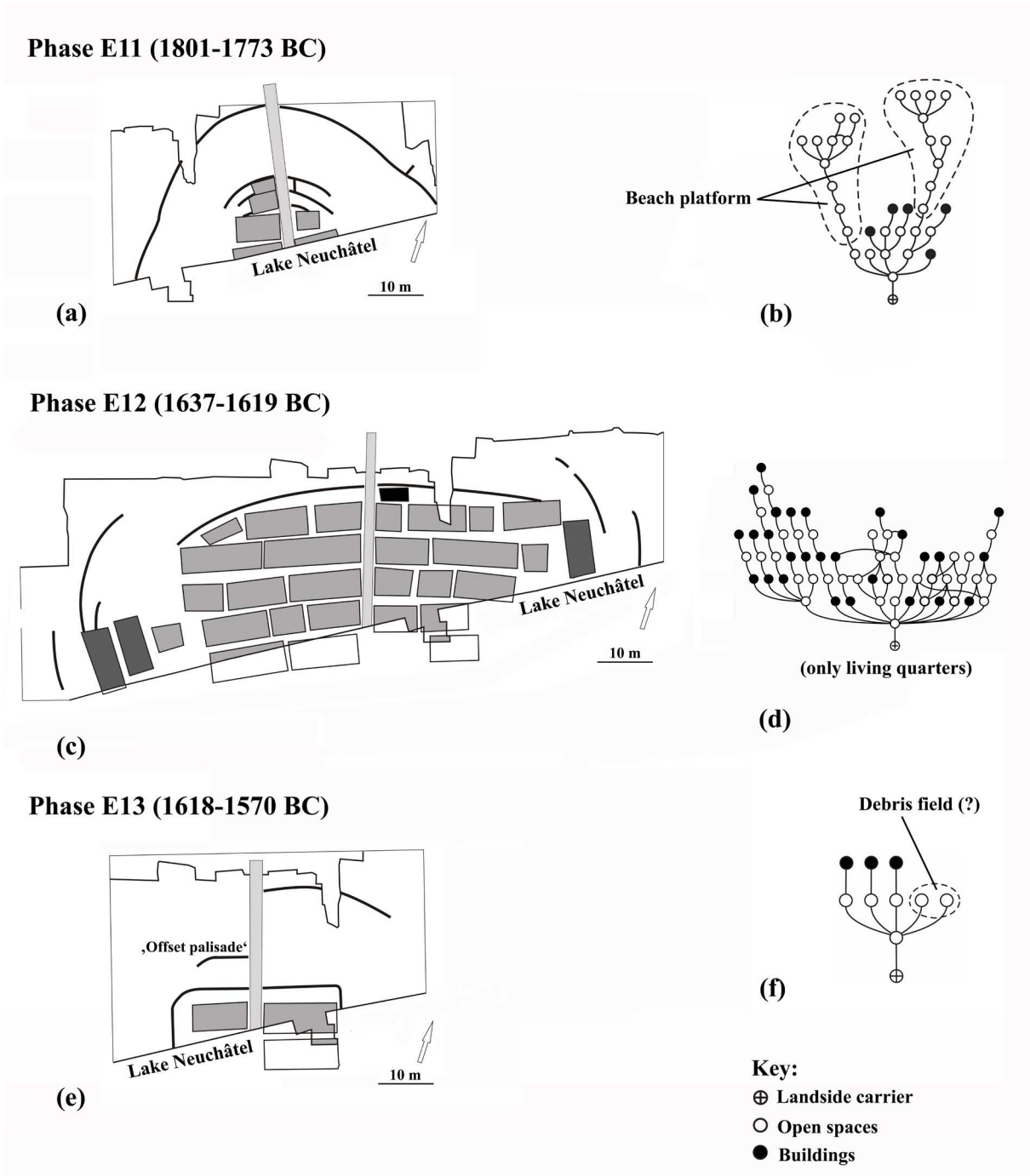

FIGURE 3. CONCISE-SOUS-COLACHOZ, SPATIAL LAYOUTS AND J-GRAPHS. IMAGE: BY THE AUTHOR, BASED ON WINIGER AND BURRI-WYSER 2012: 128, FIG. 120.

The backbone of the village was once more its elevated walkway, for which parts of the previous one were reused (Figure 3e). The village was again encircled by a range of palisades. An outer palisade east of the access way was built in the alignment of inner palisade of the previous phase. It most likely incorporated some of the surviving poles. Further to the living quarters and west of the walkway were a kind of ‘offset palisade’, while a newly built inner palisade delimited the now much smaller living quarters. Such offset alignment of palisades was not new in Concise-sous-Colachoz. A similar palisade can be attributed to the village of the corded ware phase (Auvernier-Cordé phase E10, 2652–2440 BC; Winiger 2008: 149–151).

Within the inner palisade, one building standing perpendicularly to the central access way could be identified. Based on the rectilinear alignment of the

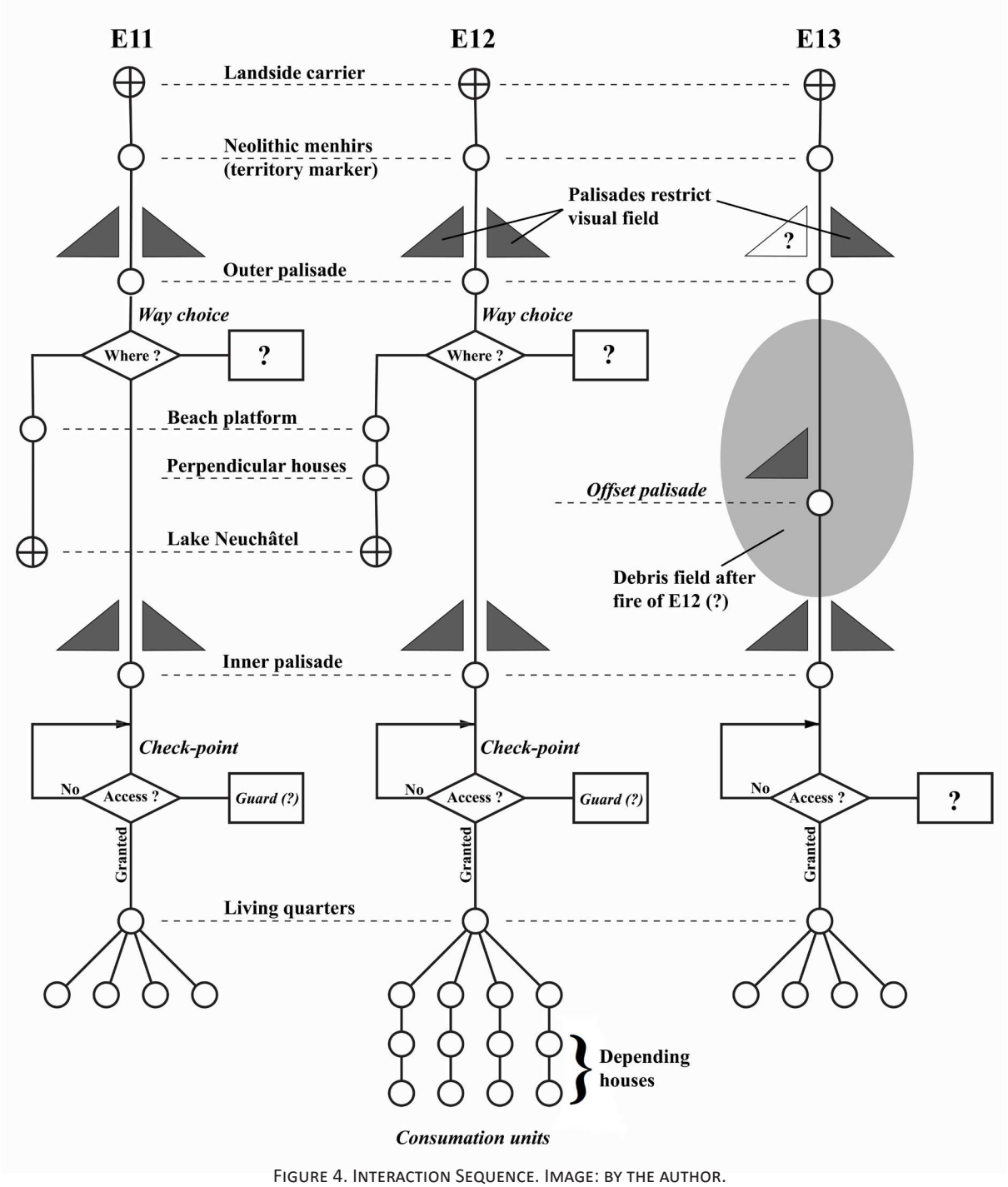

FIGURE 4. INTERACTION SEQUENCE. IMAGE: BY THE AUTHOR.

inner palisade ring, it is unlikely that the living quarters extended further from both sides of the walkway than just one building on each side. However, there is an indication of at least one additional house further towards the lake (Winiger and Burri-Wyser 2012: 119-27).

The j-graph of Concise-sous-Colachoz E13 is, despite its meagre database, comparable to the one of the initial phase E11. It reveals a tree-like structure with all buildings on the same level from the central access way and from the landside carrier (Figure 3f). However, no remains of a specially dedicated building controlling access to the living quarters could be identified anymore.

Based on these spatial configurations, the following section will look at what a stranger from afar may have experienced when approaching Concise-sous-Colachoz from its landside carrier.[6]

[6] In Space Syntax 'carrier' defines the environment outside of

Changing interaction sequence

The present paper will now consider what a Bronze Age visitor may have experienced when walking through each of the phases described above. It will employ a kind of 'flow chart' to describe how changing vision fields, obstacles or physical distances fit into a visitor's path through the village. It will explore how these aspects may have influenced a visitor's interaction with inhabitants of the village and how this changed over the three Early Bronze Age phases.

Early Phase (E11, 1801-1773 BC)

When approaching Concise-sous-Colachoz from the terraces of the Jura Chain above Lake Neuchâtel, the first thing a visitor may still have noticed in the Early Bronze Age were Neolithic menhirs (Figure 4, left).[7] These may have served as 'territory markers' delimiting spatial claims of the village.

A first-time visitor may also have come with a set of expectations about the impending interaction with inhabitants. They, in contrast, took hold of the visitor's view by building an outer palisade and providing only a small passage. When approaching the village, the outer palisade increasingly occupied the vision field and this would have influenced the visitor's expectations. This compression of view heightened anticipation of the interaction to come and grew stronger, the nearer he/she came. Similar effects can be found e.g. in Italian garden architecture from the Renaissance onwards, where towering cypresses on both sides of a passage not only block a visitor's view, but also guide a person's attention towards where the owner of the estate wanted it to be.[8]

Once past the outer palisade, a visitor's visual field suddenly expanded, and she/he would have been confronted with an array of new impressions. First, the crescent-shaped space of the lower beach platform between outer and inner palisade could be seen. Finds distribution data indicate that this was one of the main activity zones of the village (Winiger and Burri-Wyser 2012: 321–322).

On the other hand, a visitor's expectation of meeting somebody inside was not necessarily immediately met. Looking straight ahead, the view was again blocked by a second, inner palisade. Furthermore, a visitor was possibly intimidated by the 'check-point' noted above (Figure 2). Finally, there was a distinct physical distance between visitor and living quarters that could only be bridged by a narrow 'cat walk' built specifically for movement. A large convex space, on the other hand, suitable for different kinds of social interaction, was only available on the lower beach platform.

At this point, a visitor also faced a choice: (a) either to proceed onto the central elevated walkway towards the living quarters, or (b) to descend onto the beach platform. However, there was no built structure at the outer palisade, which would indicate that, at this point, the visitor's choice was already influenced by local inhabitants.

Assuming the visitor proceeded onto the elevated walkway, his/her view was again compressed by the inner palisade. Once past it, she/he was most likely confronted by someone monitoring the check-point reconstructed by Winiger and Burri-Wyser (Figure 2), controlling access to the living quarters. Nothing can be said about how access control was organised, such as whether this was a shared duty or that of a particular person/group. It is interesting, however, that a structure appears to have been specially built and set up for this task.

Finally, within the living quarters there is no sign of monumentality, which would make a particular building stand out from the others. However, in subsequent phases important changes in this interaction sequence are revealed.

Middle Phase (E12, 1645-1619 BC)

The approach during the middle phase remained basically the same despite the village being much bigger (Figure 4, middle). One important change is observed in the addition of three houses on the beach platform that stand at right angles to the village and shoreline.

These houses had direct access to the waterside carrier of Lake Neuchâtel (Figure 3c, dark grey shaded). While these buildings attract the immediate attention of today's archaeologists, isovist analysis reveals that they were actually hardly visible to a prehistoric visitor entering from the landside carrier. On the other hand, located on the same vertical plan as Lake Neuchâtel, these houses that stood perpendicular to the others were an inviting feature for someone approaching Concise-sous-Colachoz by boat. They were easily connected to big convex interaction spaces on the beach platform but deep from living quarters on the upper plan. Nothing is known about the function of these houses, but during the

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a settlement or building. In the case of lakeside dwellings, a 'landside carrier' and a 'waterside carrier' (lake, river, marshland etc.) can be differentiated.

[7] During the Neolithic, a menhir or groups of menhirs, found on the Jura terraces could be attributed to every settlement (Wolf 2002: 66).

[8] A good example is the Villa Cetinale near Siena, where its central access path is divided into sections and this compression of view is repeated several times.

Early Bronze Age, which was an age of travel and trade, we may perhaps interpret them as a kind of 'caravansary' or way station.[9]

A second important change during phase E12 was the extension of rows of houses to both sides of the elevated walkway. The un-distributed structure of the j-graph clearly reveals the dependency of these additional buildings, in particular the ones in the eastern half of the village built into Lake Neuchâtel, from the ones next to the elevated walkway (Figure 3d). Based on the spatial distribution of pottery within the settlement, Elena Burri-Wyser (2013: 305-6) very cautiously developed the idea of different consumption units. Each of these units occupied its own row of houses left or right of the central axis. These units also seem to have had their own trading connections either towards eastern Switzerland or into Burgundy.

Final phase (E13, 1618-1570 BC)

After a fire completely destroyed the middle phase, Concise-sous-Colachoz was rebuilt on a final and much smaller scale. At a glance, the new layout closely resembles the initial phase of the village (Figure 3e). However, a closer look reveals that important details had changed.

It is unclear how much of the visual impression of phase E13 had changed compared to the previous phase (Figure 4, right). This is because it cannot be determined how much of the former inner palisade of phase E12 was spared from the fire and reused for the outer palisade in phase E13 (Winiger and Burri-Wyser 2012: 124).

A more fundamental change was the most likely loss of the only available convex space between the palisade rings, which in the previous phases was important for larger scale interactions. The reason for this is that the whole of Concise-sous-Colachoz E13 was built within the area previously occupied by the living quarters of phase E12 (Winiger and Burri-Wyser 2012: 120, Fig. 113). Rebuilt just about one year after the devastating fire, it has to be assumed that some remains were still sticking out of the ground. These may have served as approach obstacles, at least in the first years of phase E13. Consequently, these obstacles most likely rendered the space between outer and inner palisade of village E13 unsuitable for interactions on the beach platform.

Such a defense-oriented interpretation of the last phase is supported by an offset palisade between the inner and outer palisade (Figure 3e). Tree ring data shows that this palisade was only added about 12 years after Concise-sous-Colachoz E13 was rebuilt (Winiger and Burri-Wyser 2012: 126). This 'offset palisade' was not linked to any previous structure but clearly underlines the defensive character of the village. On the other hand, although newly aligned, the function of the inner palisade remained comparable to the previous phases.

What also may have disappeared is the check-point at the inner palisade, which was a distinctive feature of both previous phases. The lack of a specially dedicated structure, which was previously set up to control access to the living quarters, indicates that the shared label, the common understanding of the inhabitants about how their village should be organised, had changed. One explanation that is supported by the small size of the village could be that Concise-sous-Colachoz E13 was now only inhabited by one family/clan which did not need such a structure to reinforce a shared label.

This comparison suggests that something in Concise-sous-Colachoz or in its environment must have radically changed. Therefore, the following section will ask how these observed spatial configurations and suspected social changes fit into the broader context of Early Bronze Age Switzerland.

Cultural environment and interpretation

The Early Bronze Age village of Concise-sous-Colachoz belongs to the Aare-Rhône-Group of the Rhône Civilisation (David-Elbiali and Hafner 2010). At its height, this Early Bronze Age group was located between modern Lyon, Lake Geneva and western Switzerland. Chronologically we are in its advanced and late phases.

Among the material remains of Early Bronze Age western Switzerland are elongated spoon-shaped bronze adzes. Figure 5 illustrates the basic sequence of their development from Type Lausanne to Bevaix, with the different types overlapping slightly chronologically. Hafner made a detailed analysis of these adze types. Regarding their functionality, Hafner doubted that these prestige objects were of any practical use other than representing wealth. He also wrote that wealth and prestige objects needed to be presented to satisfy their function (Hafner 1995: 138).

This paper takes up Hafner's remarks. It wonders, whether we are allowed to expect in the broader context of Early Bronze Age 'prestige goods' — and similar to different royal courts of later historic periods — certain kinds of interaction rituals, courtship etiquettes or similar patterns of behaviour in which spatial layouts formed a kind of 'stage', where prestige goods such

[9] I had the great pleasure of discussing these possibilities with Prof. Kristian Kristiansen and other colleagues during a lunch break at the 13th Nordic Bronze Age Symposium in Gothenburg in June 2015.

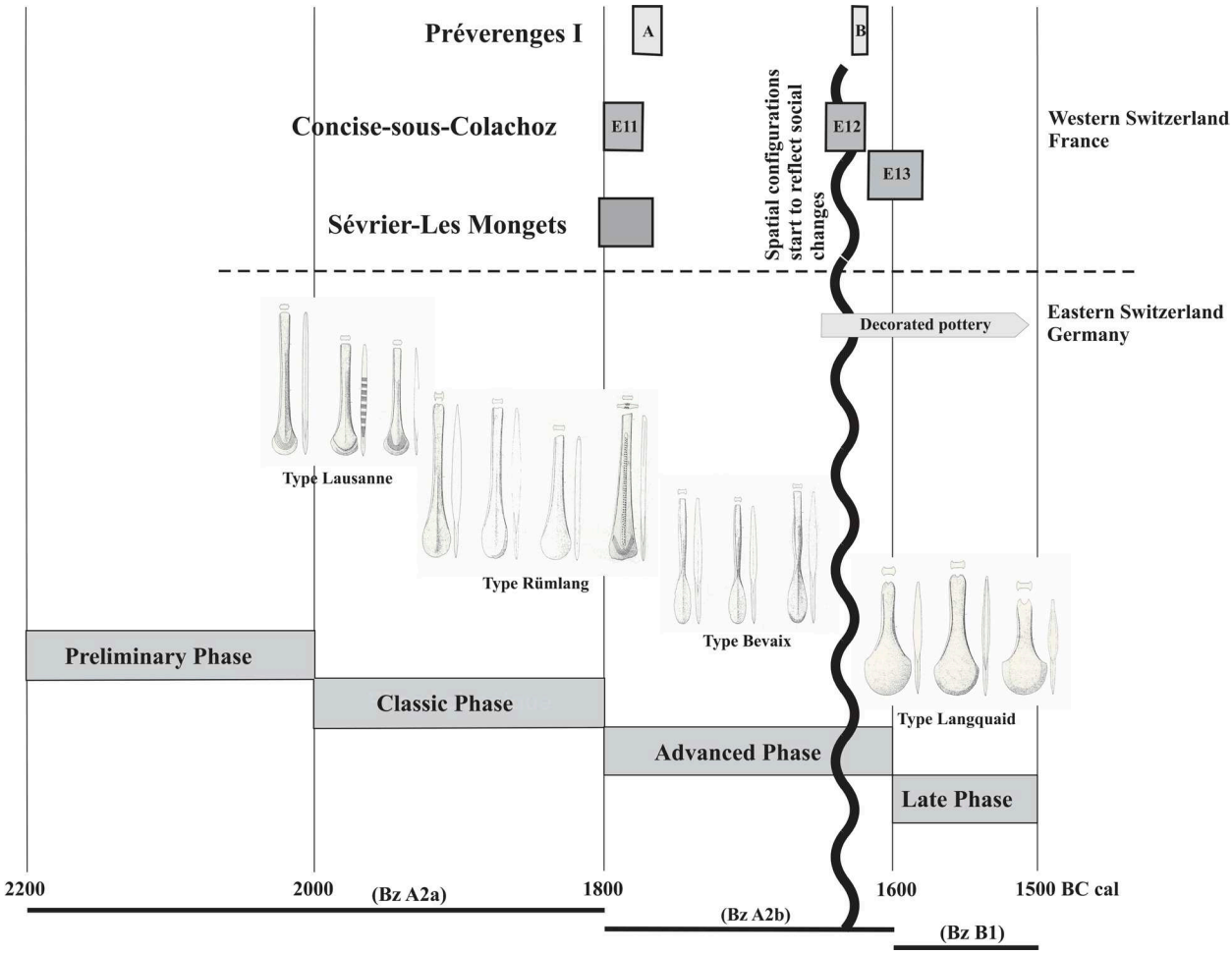

FIGURE 5. SPATIAL CHANGES AND CULTURAL CONTEXT IN WESTERN SWITZERLAND. LOCAL CHRONOLOGICAL PHASING BASED ON DAVID-ELBIALI 2000. IMAGE: BY THE AUTHOR.

as bronze weapons or jewellery were displayed in inhabitant-visitor interactions.

The interpretation of settlements as stages is not new. It was prominently formulated by American historian and sociologist Lewis Mumford. He said that the city was 'a theatre of social action', and the physical organisation of the city makes the 'social drama [...] more richly significant, as a stage-set, well-designed, intensifies and underlines the gestures of the actors and the action of the play' (Mumford 1937: 93).

All three Early Bronze Age phases of Concise-sous-Colachoz revealed a strong emphasis of their axis. Hillier (2007: 171–184) used this as a definition of strange towns, where the axis is not instrumental for movement but a symbol. He linked the occurrence of this type of axis to societies 'where the needs of social reproduction are dominant over the needs of social production' (Hillier 2007: 184). Hillier named as one example pre-Columbian Teotihuacan, which the author of this paper considers as too farfetched in the present context. Added to this, the interpretation of consumption units and particularly the construction of these perpendicular buildings, well integrated for inhabitant-visitor interactions, add a strong economic component to the middle phase of Concise-sous-Colachoz.

However, the elevated walkway linking outer and inner palisades may well have served as stage for interaction between persons of similar social status. Hillier illustrates the socially segregating effect of long and narrow spaces by comparing them with cartoons of far-too-long dinner tables with dukes and duchesses sitting at opposite ends (Hillier 2014: 81). In the present context, local dignitaries and equally ranked visitors would be found at opposite ends of the elevated walkway. In rituals, likely also involving the display of 'prestige goods', the initial physical distance between them had to be bridged before interaction on equal terms could take place.

In this respect, the existence of Concise-sous-Colachoz E11 and Sévrier-Les Mongets as two

distant contemporaneous villages of the same cultural background and with very similar spatial configurations is an interesting fact. Hillier (2007: 29) says 'that one of the aims of ceremonial life is to make things happen across distances, and so bring together what would otherwise be separated'. Therefore, it will be interesting to see if future sites of the Rhône Civilisation also fit into this scheme, or if comparable rituals in other cultural groups reveal similar strategies.

Hillier further pointed out that 'space is not created by the interrelated demands of specific activity patterns, but indirectly by the different demands which "kinds" of activity place on movement and co-presence that is created by space' (Hillier 2014: 44). Visibility graph analysis and agent-based analysis both illustrate that in particular the big convex space on the beach platform had a great 'generative potential' for human interactions. In this respect, Concise-sous-Colachoz — and a number of other lakeside settlements of different epochs — had a clear deficit of convex space within its inner palisade rings. Space within its living quarters could not accommodate activities demanding co-presence of a large number of people. This leads to the conclusion that visitors were most likely not allowed past the check-point. Therefore, we could also define the living quarters as 'private space' and the large convex space of the beach platform as 'public space'.

On the other hand, this lack of large convex spaces prevented inhabitants themselves from reproducing their own social structure through performing, for example, different rites of passage. Such community bonding activities would then have to be held on the beach platform or outside the village. Based on Burri-Wyser's (2013: 306) model of 'consumption units' and their members possibly having come from afar, social reproduction may even have been organised by each unit separately. Such a model, however, revealed a rather weak, most likely only economically motivated, shared label of phase E12.

The loss of convex space within the last phase E13 could then also explain the sharp decline of the village facing changes at the brink of Middle Bronze Age, with social relations returning to a focus on family bonds over trade connections. As Hillier (2014: 44) pointed out, new activities constantly evolving as society changes often fit effortlessly into existing patterns of space. No matter how much society changes, there is always likely to be a variety of activities with different demands on movement and co-presence that find their appropriate locus within the existing space available, provided that it is sufficiently rich. As a consequence, catering only for movement but not for interaction, Concise-sous-Colachoz E13 eventually failed.

The great spatial decline occurred in Concise-sous-Colachoz in the last quarter of the 17th century BC. Interestingly, spatial changes can also be observed in other villages. The open lakeside settlement of Préverenges I at Lake Geneva e.g. comprised two phases dating to 1780–1758 BC (phase A) and 1625–1619 BC (phase B). During its second phase, Préverenges I revealed a far less regular layout with buildings spreading over greater distances. Corboud and Pugin (2008: 53) attributed differences in the spatial development of Préverenges I to a more stable ecological, social and political environment in western Switzerland during phase A, between 1780 and 1758 BC.

Based on the analysis of a great number of radiocarbon dates Stockhammer *et al*. (2015: 29) recently arrived at a different interpretation of Early Bronze Age phases BzA1 and BzA2. They date the end of Early Bronze Age in southern Germany to around 1700 BC. Stockhammer *et al*. (2015: 29) also propose that 'BzA1 and BzA2 should not be understood as chronological sequence even beyond southern Germany'. Instead 'BzA1 and BzA2 seem to appear as different levels of ability and willingness to appropriate the new bronze technology and non-technological knowledge transferred together with the technological knowledge'.

In such a context, spatial layouts of Concise-sous-Colachoz and Sévrier-Les Mongets are part of this non-technological knowledge. They may be seen as regionally differentiated strategies of particular social groups to express their cultural identity or social ranks through built space. The end of our time window coincides with the proliferation of Langquaid adzes in eastern Switzerland. This type was now far more a practical tool than prestige object, as countless traces in many lakeside settlements indicate. Added to this, the area around Zurich saw a quick proliferation of richly decorated pottery in the second half of the 17th century BC (Conscience 2001a, 2001b). Pottery is another vehicle to express one's cultural identity. In contrast to bronze, clay for pottery vessels was more readily available and much cheaper. Therefore, pottery had a far greater 'social penetration depth' than luxury goods and space. It also enabled lower social classes to participate in expressing their membership in society. Consequently, it rendered obsolete 'prestige objects' and 'built space as stages' to display them.

Conclusions and future research

The present paper took an experimental approach and combined Space Syntax with aspects of spatial perception. It looked through the eyes of Early Bronze Age visitors and explored how they may have experienced the village of Concise-sous-Colachoz. The

paper outlined spatial changes during its Early Bronze Age phases and revealed how they influenced potential interactions between inhabitants and strangers.

During its initial phase E11, Concise-sous-Colachoz' overall spatial concept matched cultural and economic demands. The founders of the middle phase E12 (1645–1619 BC) were not only able to reproduce spatial configurations of the previous village but attracted more inhabitants, possibly even from afar. This indicates that a stable agent environment, as illustrated with Préverenges I, phase A at Lake Geneva, most likely remained in western Switzerland until about the mid-17th century BC. On the other hand, social changes must here have already occurred during the existence of Concise-sous-Colachoz E12. This is because the rebuilders of its final phase E13 (1618–1570 BC) were unable to recognise how an emerging Middle Bronze Age society generated new activities with different demands on built space. Instead they stuck to past 'proven concepts'. Consequently, new Middle Bronze Age activities could not find suitable space in Concise-sous-Colachoz E13 to develop the village further.

On the whole, spatial changes outlined for Concise-sous-Colachoz and western Switzerland fit well in a broader picture of the Early Bronze Age as a stage of important changes in people's mindsets. Ebersbach (2010: 208) concluded that the village in legal terms did not yet exist in the Late Neolithic. Instead, communities were still very mobile in their surrounding territory. Others (e.g. Billamboz *et al.* 2009: 371–381; Brun *et al.* 2010) showed how signs of 'territoriality' emerged in Central Europe during the Early and Middle Bronze Age. Communities also started investing in strategic infrastructures (e.g. the bridge between Rapperswil and Hurden at Lake Zurich; Scherer and Wiemann 2008).

With the spatially limited availability of tin as an important alloy component in the developing bronze technology, Early Bronze Age societies are likely to have realised that space in itself was a power-generating commodity. The Early Bronze Age may therefore have witnessed the birth of strategic spatial thinking as a vital step in the formation of chiefdoms and subsequent higher forms of territorial organisations.

An aspect that needs to be explored in future work is the significance of the lack of sufficiently large convex space suitable for human interaction, since, as outlined above, this is one possible reason for the demise of Concise-sous-Colachoz'. The relationship between space and society that can be explored using Space Syntax has the potential to serve as an explanation for why many lakeside settlements were abandoned at the end of the Early Bronze Age.

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